Discrimination of vowel length contrasts in known/learned and unknown/unlearned languages by native speakers of American English

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BACKGROUND

– Vowel length ***CONTRASTIVE*** in **Arabic (A)** and **Japanese (J)** (e.g. 風鈴 *fuurin* ‘wind bell’ vs. 不倫 *furin* ‘adultery’).

– But not so in **American English (US)**.

– What happens when **US** speakers learn Japanese, i.e. **Non-Native Japanese (NNJ)**?

– English-speaking learners’ difficulty producing and perceiving length contrasts in **J** well-known.

AIM

To compare the discrimination accuracy of vowel length contrasts in **Arabic** and **Japanese** by 3 groups of listeners (**NJ**, **NNJ**, **US**).

A: unknown/unlearned for **NJ**, **NNJ**, **US**

J: known/learned for **NJ**, **NNJ** but unknown/unlearned for **US**

QUESTIONS

Q. Do **NJ** and **NNJ** differ?

Q. Do **US** and **NNJ** differ?

➔ How generalizable is L2 learning to spoken language processing and subsequent foreign language learning?

EXPECTATIONS

➔ **NJ**: possible to use their L1 knowledge to process **A**.

➔ **NJ** > **NNJ** > **US** in BOTH **A** and **J.**

Alternatively,

➔ **NJ** > **NNJ** > **US** for **J** ONLY and

NJ = **NNJ** = **US** for **A**

SPEAKERS/SPEECH MATERIALS

– **3** female native **Arabic** speakers recorded in Sydney, Australia.

– **3** female native **Japanese** speakers recorded in Tokyo, Japan.

– C_1VC_2 words (V = short or long vowel (/i a u/ in **A** and /i e a o u/ in **J**, C_2 = nasal sound).

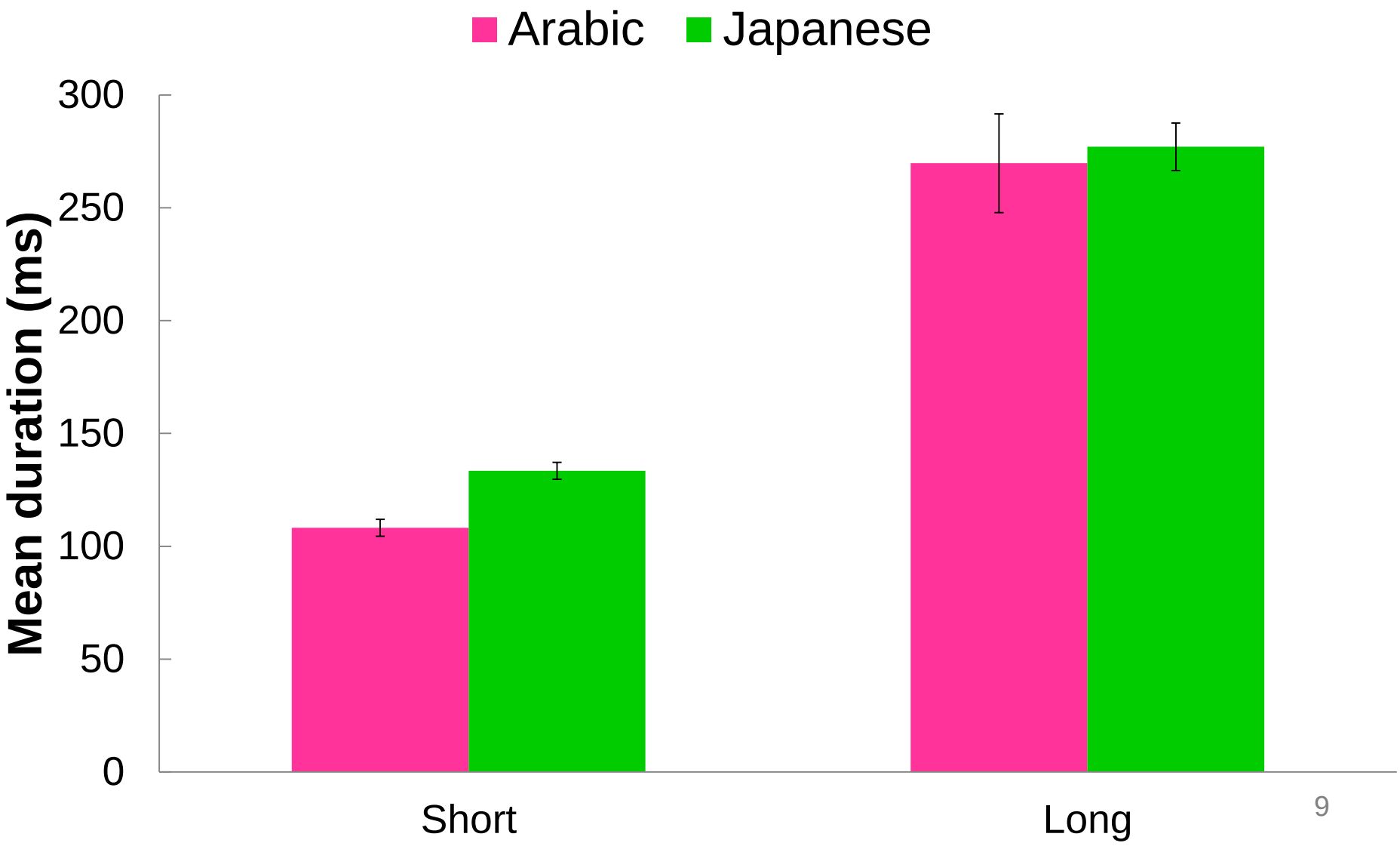
ARABIC WORDS

vowel	short	long
/i/-/iː/	دِن din ‘large jug’	دين diin ‘religion’
	مِن min ‘from’	مين miin ‘whom (colloquial)’
/a/-/aː/	بن ban ‘coffee (beans)’	بان baan ‘to appear’
	دم dam ‘blood’	دام daam ‘to keep on’
/u/-/uː/	سُم sum ‘poison’	سُوم suum ‘negotiate the price’

JAPANESE WORDS

vowel	Short	long
/i/-/iː/	ビン bin	ビーン biin
/e/-/eː/	ベン ben	ベーン been
/a/-/aː/	バン ban	バーン baan
/o/-/oː/	ボン bon	ボーン boon
/u/-/uː/	ブン bun	ブーン buun

CHARACTERISTICS OF STIMULI



LISTENERS

– **5 NJ** listeners (5 f)

– **21 NNJ** (10 m, 11 f)

[**7** lower intermediate (1st and 2nd year level), **13** upper intermediate/advanced (3rd year and above), **1** currently not enrolled (4 years + of experience)]

– **13 US** (2 m, 11 f)

– All tested in USA (Colgate University or University of Oregon).

– All normal hearing and no language deficiency in their L1s (self-report).

Two-alternative forced-choice AXB discrimination

– Decide if the **2nd** token was the same as the **1st** token or the **3rd** token.

– All three tokens spoken by different speakers.

– 120 trials for **A** and 120 trials for **J**.

– Each token played once.

– Tested individually in a 30-40 minute session in a quiet room.

– Two stimulus languages presented in counterbalanced orders across the listeners.

AXB DISCRIMINATION TEST
(subscript indicates different speakers)

1 = 2	2 = 3

ビン$_3$ ビン$_1$ ビーン$_2$

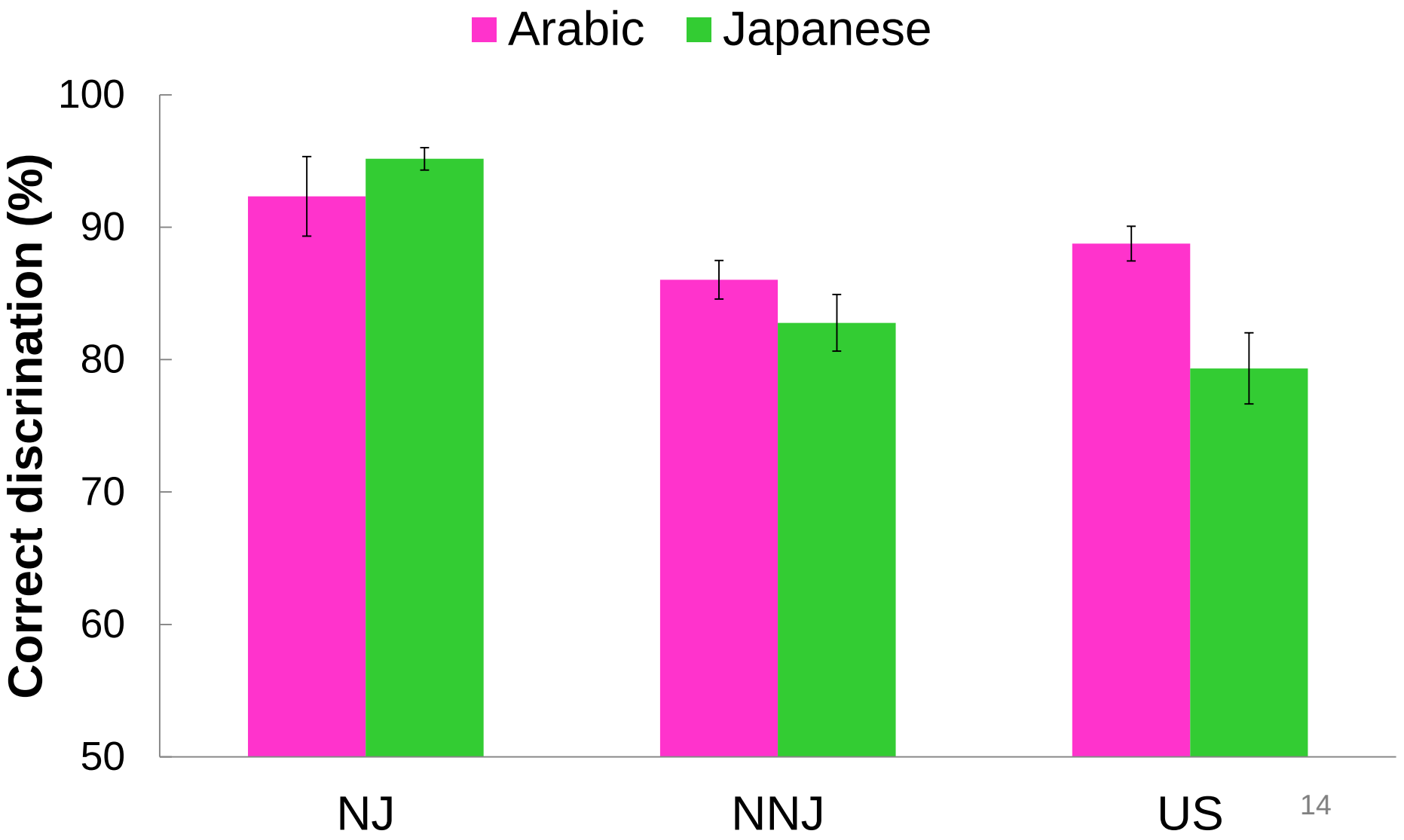
دم$_3$ دم$_1$ دام$_2$

ANALYSIS

– 2-way ANOVA with Group (**NJ, NNJ, US**) and Language (**A, J**).

– Dependant variable: Listeners' discrimination accuracy (%).

RESULTS


Arabic
Japanese
Correct discrination (%)
100
90
80
70
60
50
NJ
NNJ
US

SUMMARY OF RESULTS

NJ: **Japanese** (95%) = **Arabic** (92%)

NNJ: **Arabic** (86%) = **Japanese** (83%)

US: **Arabic** (89%) > **Japanese** (79%)

Arabic: **NJ** = **US** = **NNJ**

Japanese: **NJ** > **NNJ** = **US**

=> Japanese length contrasts difficult

DISCUSSION/CONCLUSIONS

– **NNJ *NOT BETTER*** than **US** in discriminating length contrasts in either **Arabic** or **Japanese**.

BUT…

– ***BALANCED*** (**A** = **J**) for **NNJ**.

– ***NOT BALANCED*** (**A** > **J**) for **US**.

➔ Cross-language speech perception plastic in adulthood.

FUTURE WORK

– Relate perception results to stimuli characteristics.

– Relate perception results to **NNJ**'s Japanese proficiency levels (High vs. Low) or length of study.

– Examine the perception of listeners who have no experience with either **Arabic** or **Japanese**, but who are ***familiar*** (e.g. Finnish, Serbian, Thai, etc.) and ***unfamiliar*** (e.g. Mandarin, Spanish, etc.) with length contrasts in their L1.

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Come study with us at Macquarie University, Sydney!

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